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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Daniel A. Keys and Parameswara Reddy)
Serial No: 10/032,592
Filed : October 24, 2001
For : EFFICIENT SYNTHESIS OF) Attorney Dkt. No.
PROTEIN-OLIGONUCLEOTIDE) 3501.116 (2065-181)
CONJUGATES)

INFORMATION DISCLOSURE STATEMENT
PURSUANT TO 37 CFR §§ 1.197(b)(1) and 1.56

Assistant Commissioner for Patents
Washington, D. C. 20231

References 2 of 2



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In re Application of:

Daniel A. Keys and M. Parameswara Reddy

Examiner:

Serial No.: Unknown

Art Unit:

Filed: Unknown

Title: **Efficient Synthesis of Protein-Oligonucleotide Conjugates**

Atty Dkt. No.: 3501.116

INFORMATION DISCLOSURE STATEMENT PURSUANT TO 37 CFR §§ 1.197(b)(1) AND 1.56

Assistant Commissioner of Patents
Washington, D.C. 20231

Sir:

In accordance with 37 CFR §§ 1.97 and 1.56, Applicant herewith submits the following Information Disclosure Statement. A copy of all cited documents are enclosed herewith.

This Information Disclosure Statement is being submitted within 3 months of the filing date of the present application. Accordingly, no fee is required for its consideration and for the consideration of the cited documents. The cited documents are:

AA1	4,526,871 (Avrameas, <i>et al.</i>)	AE3	5,854,033 (Lizardi)
AB1	4,683,194 (Saiki, <i>et al.</i>)	AA4	5,876,928 (Kourilsky, <i>et al.</i>)
AC1	4,683,202 (Mullis)	AB4	5,955,262 (Kourilsky, <i>et al.</i>)
AD1	4,946,778 (Ladner, <i>et al.</i>)	AC4	5,976,822 (Landrum, <i>et al.</i>)
AE1	5,270,184 (Walker, <i>et al.</i>)	AD4	5,989,823 (Jayasena, <i>et al.</i>)
AA2	5,316,906 (Haugland, <i>et al.</i>)	AE4	6,124,120 (Lizardi)
AB2	5,427,930 (Birkenmeyer, <i>et al.</i>)	AA5	6,143,495 (Lizardi, <i>et al.</i>)
AC2	5,443,986 (Haugland, <i>et al.</i>)	AB5	6,180,338 (Adams)
AD2	5,455,166 (Walker)	AC5	6,197,513 (Coull, <i>et al.</i>)
AE2	5,552,541 (Adams)	AD5	6,207,368 (Adams)
AA3	5,605,800 (Kourilsky, <i>et al.</i>)	AE5	6,218,152 (Auerbach)
AB3	5,648,213 (Reddy, <i>et al.</i>)	AA6	6,251,621 (Lawrence, <i>et al.</i>)
AC3	5,698,411 (Lucas, <i>et al.</i>)	AB6	6,261,808 (Auerbach)
AD3	5,733,733 (Auerbach)	AC6	6,090,552 (Nagasaki, <i>et al.</i>)

AE1 EP 641,354
AN1 EP A 439,182

AM1 EP A 320,308



- AR1 Bhattacharyya S.P., *et al.*, "Structural analysis of DNA cleaved in vivo by bacteriophage T4 terminase," *Gene* 1994 Aug 19;146(1):67-72.
- AS1 Brandtzaeg, 1973, "Conjugates of immunoglobulin G with different fluorochromes. I. Characterization by anionic-exchange chromatography," *Scand. J. Immunol.* 1973;2(3):273-90.
- AT1 Chung E.L., "Chemoprevention of lung cancer by isothiocyanates and their conjugates in A/J mouse," *Exp. Lung Res.* 2001 Apr-May;27(3):319-30.
- AR2 Ezaki, T. *et al.*, "Simple genetic method to identify viridans group streptococci by colorimetric dot hybridization and fluorometric hybridization in microdilution wells," *J. Clin. Microbiol.* 1988 Sep;26(9):1708-13
- AS2 Ghosh SS, *et al.*, "Use of maleimide-thiol coupling chemistry for efficient syntheses of oligonucleotide-enzyme conjugate hybridization probes," *Bioconjug. Chem.* 1990 Jan-Feb;1(1):71-6.
- AT2 Gupta R.K., *et al.*, "Adjuvants for human vaccines - current status, problems and future prospects," *Vaccine* 1995 Oct;13(14):1263-76.
- AR3 Hendrickson, R.E. *et al.*, *Nucl., Acids Res.* 23:522-529 (1994).
- AS3 Kohler, G. & Milstein, C., "Continuous cultures of fused cells secreting antibody of predefined specificity," *Nature.* 1975 Aug 7;256(5517):495-7.
- AT3 Kusunoki, S. *et al.*, "Application of colorimetric microdilution plate hybridization for rapid genetic identification of 22 Mycobacterium species," *J. Clin. Microbiol.* 1991 Aug;29(8):1596-603.
- AR4 Loken and Herzenberg, 1975, "Analysis of cell populations with a fluorescence-activated cell sorter," *Ann. N.Y. Acad. Sci.* 1975 Jun 30;254:163-71.
- AS4 Martin R., *et al.*, "A highly sensitive, nonradioactive DNA labeling and detection system," 13: *Biotechniques* 1990 Dec;9(6):762-8).
- AT4 Morrison, S. *et al.*, "Chimeric human antibody molecules: mouse antigen-binding domains with human constant region domains," *Proc. Natl. Acad. Sci. U S A.* 1984 Nov;81(21):6851-5.
- AR5 Oi, V. T. & Morrison, S. L., *BioTechniques* 4:214-221 (1986).




- AT5 Samoszuk, M.K., *et al.*, "A peroxide-generating immunoconjugate directed to eosinophil peroxidase is cytotoxic to Hodgkin's disease cells in vitro," *Antibody, Immunoconjugates Radiopharmaceuticals* 2(1), 37-45 (1989).
- AR6 Tramontano, A. *et al.*, "Chemical reactivity at an antibody binding site elicited by mechanistic design of a synthetic antigen," *Proc. Natl. Acad. Sci. U.S.A.* 1986 Sep;83(18):6736-40.
- AS6 Tyagi, *et al.*, "Molecular beacons: probes that fluoresce upon hybridization," *Nature Biotechnol.* 14(3):303-8 (1996).
- AT6 Wood, C. R. *et al.*, *Nature* 314:446-449(1985).
- AR7 Yarmush, M.L. *et al.*, "Covalent protein-oligonucleotide conjugates for efficient delivery of antisense molecules," *Bioconjug Chem.* 1997 Nov-Dec;8(6):935-940 (1997).
- AS7 Zhang T.H., *et al.*, "Detection for anti-hantavirus IgM in patient serum with silver enhanced dot immunogold filtration assay," *Zhonghua Shi Yan He Lin Chuang Bing Du Xue Za Zhi* 2000 Sep;14(3):266-7.

The Examiner is requested to contact the undersigned immediately in the event that any cited document may be unavailable in order that a replacement copy can be provided.

Respectfully submitted,

Date: 1/31/02



Jeffrey I. Auerbach
Registration No. 32,680

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PTO 1449		Page 1 of 6	
INFORMATION DISCLOSURE STATEMENT		Atty Dkt: 3501.116 (2065-181)	Serial No. 10/032,592
Title: EFFICIENT SYNTHESIS OF PROTEIN-OLIGONUCLEOTIDE CONJUGATES		Applicant: Firdous Farooqui, <i>et al.</i>	
		Filing Date: October 24, 2001	Group

U.S. PATENT DOCUMENTS

Examiner's Initial		Patent Number	Date	Name	Class	Sub-Class	Filing Date
	AA1	4,526,871	7/2/85	Avrameas, <i>et al.</i>	436	504	5/20/81
	AB1	4,683,194	7/28/87	Saiki, <i>et al.</i>	436	6	3/28/85
	AC1	4,683,202	7/28/87	Mullis	435	91	10/25/85
	AD1	4,946,778	8/7/90	Ladner, <i>et al.</i>	435	69.6	1/19/89
	AE1	5,270,184	12/14/93	Walker, <i>et al.</i>	435	91.2	11/19/91

FOREIGN PATENT DOCUMENTS

		Document Number	Date	Country	Class	Sub-Class	Translation Yes/No
	ALI ✓	EP 641,351	10/23/96	EUROPEAN	C07H	15/26	No
	AMI ✓	EP A 320,308	11/3/93	EUROPEAN	C12Q	1/68	No
	ANI ✓	EP A 439,182	4/24/96	EUROPEAN	C12Q	1/68	No

OTHERS, including Author, Title, Date, Pertinent Pages, etc.

	AR1	✓	Bhattacharyya S.P., <i>et al.</i> , "Structural analysis of DNA cleaved in vivo by bacteriophage T4 terminase," <i>Gene</i> 1994 Aug 19;146(1):67-72.
	AS1	✓	Brandtzaeg, 1973, "Conjugates of immunoglobulin G with different fluorochromes. I. Characterization by anionic-exchange chromatography," <i>Scand. J. Immunol.</i> 1973;2(3):273-90.
	AT1	✓	Chung E.L., "Chemoprevention of lung cancer by isothiocyanates and their conjugates in A/J mouse," <i>Exp. Lung Res.</i> 2001 Apr-May;27(3):319-30.
	AR2	✓	Ezaki, T. <i>et al.</i> , "Simple genetic method to identify viridans group streptococci by colorimetric dot hybridization and fluorometric hybridization in microdilution wells," <i>J. Clin. Microbiol.</i> 1988 Sep;26(9):1708-13.
	AS2	✓	Ghosh SS, <i>et al.</i> , "Use of maleimide-thiol coupling chemistry for efficient syntheses of oligonucleotide-enzyme conjugate hybridization probes," <i>Bioconjug. Chem.</i> 1990 Jan-Feb;1(1):71-6.

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	AA2	5,316,906	5/31/94	Haugland, <i>et al.</i>	435	4	8/23/91
	AB2	5,427,930	6/27/95	Birkenmeyer, <i>et al.</i>	435	91.52	6/28/91
	AC2	5,443,986	8/22/95	Haugland, <i>et al.</i>	435	4	7/6/93
	AD2	5,455,166	10/3/95	Walker	435	91.2	1/9/92
	AE2	5,552,541	9/3/96	Adams	536	22.1	6/20/90
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	AT2	✓	Gupta R.K., <i>et al.</i> , "Adjuvants for human vaccines – current status, problems and future prospects," <i>Vaccine</i> 1995 Oct;13(14):1263-76.				
	AR3	✓	Hendrickson, R.E. <i>et al.</i> , <i>Nucl., Acids Res.</i> 23:522-529 (1994).				
	AS3	✓	Kohler, G. & Milstein, C., "Continuous cultures of fused cells secreting antibody of predefined specificity," <i>Nature</i> . 1975 Aug 7;256(5517):495-7.				
	AT3	✓	Kusunoki, S. <i>et al.</i> , "Application of colorimetric microdilution plate hybridization for rapid genetic identification of 22 <i>Mycobacterium</i> species," <i>J. Clin. Microbiol.</i> 1991 Aug;29(8):1596-603.				
	AR4	✓	Loken and Herzenberg, 1975, "Analysis of cell populations with a fluorescence-activated cell sorter," <i>Ann. N.Y. Acad. Sci.</i> 1975 Jun 30;254:163-71.				
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	AA3	5,605,800	2/25/97	Kourilsky, <i>et al.</i>	435	6	6/6/95
	AB3	5,648,213	7/15/97	Reddy, <i>et al.</i>	435	6	8/30/94
	AC3	5,698,411	12/16/97	Lucas, <i>et al.</i>	435	29	5/18/95
	AD3	5,733,733	3/31/98	Auerbach	435	6	2/1/96
	AE3	5,854,033	12/29/98	Lizardi	435	91.2	11/21/95

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Document Number	Date	Country	Class	Sub-Class	Translation Yes/No

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AT4	✓	Morrison, S. <i>et al.</i> , "Chimeric human antibody molecules: mouse antigen-binding domains with human constant region domains," <i>Proc. Natl. Acad. Sci. U S A</i> 1984 Nov;81(21):6851-5.
AR5	✓	Oi, V. T. & Morrison, S. L., <i>BioTechniques</i> 4:214-221 (1986).
AS5	✓	Riechmann, L. <i>et al.</i> , "Reshaping human antibodies for therapy," <i>Nature</i> 1988 Mar 24;332(6162):323-7.
AT5	/	Samoszuk, M.K., <i>et al.</i> , "A peroxide-generating immunoconjugate directed to eosinophil peroxidase is cytotoxic to Hodgkin's disease cells in vitro," <i>Antibody, Immunoconjugates Radiopharmaceuticals</i> 2(1), 37-45 (1989).
AR6	/	Tramontano, A. <i>et al.</i> , "Chemical reactivity at an antibody binding site elicited by mechanistic design of a synthetic antigen," <i>Proc. Natl. Acad. Sci. U S A</i> 1986 Sep;83(18):6736-40.

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	AB4	5,955,262	9/21/99	Kourilsky, <i>et al.</i>	435	6	9/8/92
	AC4	5,976,822	11/2/99	Landrum, <i>et al.</i>	435	23	8/20/97
	AD4	5,989,823	11/23/99	Jayasena, <i>et al.</i>	435	6	9/18/98
	AE4	6,124,120	9/26/00	Lizardi	435	91.2	10/8/97

FOREIGN PATENT DOCUMENTS

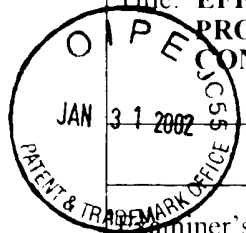
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AS6	✓	Tyagi, <i>et al.</i> , "Molecular beacons: probes that fluoresce upon hybridization," <i>Nature Biotechnol.</i> 14(3):303-8 (1996).
AT6	✓	Wood, C. R. <i>et al.</i> , <i>Nature</i> 314:446-449(1985).
AR7	✓	Yarmush, M.L. <i>et al.</i> , "Covalent protein-oligonucleotide conjugates for efficient delivery of antisense molecules," <i>Bioconjug Chem.</i> 1997 Nov-Dec;8(6):935-940 (1997).
AS7	✓	Zhang T.H., <i>et al.</i> , "Detection for anti-hantavirus IgM in patient serum with silver enhanced dot immunogold filtration assay," <i>Zhonghua Shi Yan He Lin Chuang Bing Du Xue Za Zhi</i> 2000 Sep;14(3):266-7.
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	AA5	6,143,495	11/7/00	Lizardi, <i>et al.</i>	435	6	11/21/96
	AB5	6,180,338	1/30/01	Adams	435	6	5/27/93
	AC5	6,197,513	3/6/01	Coull, <i>et al.</i>	435	6	2/10/99
	AD5	6,207,368	3/27/01	Adams	435	6	10/21/94
	AE5	6,218,152	4/17/01	Auerbach	435	91.2	11/9/98

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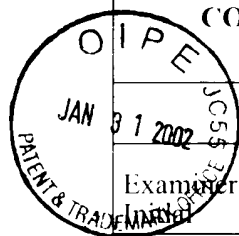
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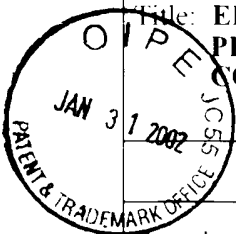
OTHERS, including Author, Title, Date, Pertinent Pages, etc.

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	AB6	6,261,808	7/17/01	Auerbach	435	91.1	9/8/00
	AC6	6,090,552	7/18/00	Nazarenko, <i>et al.</i>	435	6	7/11/97
	AD6						
	AE6						

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	ARI0		
	ASI0		
	ATI0		
	ARI1		
	ASI1		

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